
DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Final Rule To Determine *Agave Arizona* (Arizona Agave) To Be an Endangered Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines a plant, *Agave arizonica* H. S. Gentry and J. H. Weber (Arizona agave), to be an endangered species under the authority contained in the Endangered Species Act of 1973, as amended. Critical habitat is not designated. The species is a native plant of Arizona and occurs in the Tonto National Forest. Less than 100 plants total are known to exist and they are threatened by collectors for horticultural use, by cattle and deer browsing, and by a lack of protection planning. This action implements protection provided by the Endangered Species Act of 1973, as amended.

DATE: The effective date of this rule is June 18, 1984.

ADDRESS: The complete file for this rule is available for inspection during normal business hours, by appointment, at the U.S. Fish and Wildlife Service, Region 2, 421 Gold Avenue, SW., Albuquerque, New Mexico 87103, (505/766-3972).

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FOR FURTHER INFORMATION CONTACT: Dr. Russell Kologiski, U.S. Fish and Wildlife Service, Office of Endangered Species, P.O. Box 1306, Albuquerque, New Mexico 87103, (505/766-3972).
SUPPLEMENTARY INFORMATION:

Background

Agave arizonica was first discovered by J. H. Houzenga, M. J. Hazlett, and J. H. Weber in the New River Mountains of Arizona. Drs. H. S. Gentry and J. H. Weber described this species in the Cactus and Succulent Journal in 1970 (Gentry, 1970). This member of the Agave family has leaves growing from the base in a somewhat flattened globular form, about 30.7 centimeters high and 41 centimeters broad. The slender, branching flowering stalk is 2.7-3.6 meters tall. The flowers are small, pale yellow, and jar-shaped.

This species is endemic to a very small area in the creek bottoms and granite hills near the summit of the New River Mountains in central Arizona at an elevation of 915 to 1,830 meters. The surrounding vegetation is a chaparral association that is transitional between oak-juniper woodland and mountain mahogany-oak scrub. The soil is mixed gravelly loam from Mazatzal quartzite. The continued existence of this plant is threatened by cattle and deer browsing, insect damage, and potential collecting for commercial trade. Originally, 19 populations of *Agave arizonica* were known; now only 13 populations are known to be extant.

On July 1, 1975, the Service published a notice of review in the **Federal Register** (40 FR 27823) indicating its acceptance of the report of the Smithsonian Institution as a petition within the context of Section 4(c)(2) of the Act (Section 4(b)(3)(A) now), and of its intention thereby to review the status of the plant taxa included therein. The Arizona agave was included in the 1975 notice of review. On June 16, 1976, the Service published a proposed rule in the **Federal Register** (41 FR 24523) which included *Agave arizonica* as an endangered species. On December 10, 1979, the Service withdrew all outstanding proposals not finalized within 2 years of their first publication, as required by the 1978 Amendments to the Act. On August 26, 1980, the Service received a status report prepared by four researchers at the Museum of Northern Arizona. This report documented the status of, and threats to, the species. On December 15, 1980, the Service published a revised notice for plants (45 FR 82479 and included *Agave arizonica* in category 1. Category 1 is comprised of taxa for which the Service

presently has sufficient biological information to support their being listed as endangered or threatened species. The Service published a proposed rule to list *Agave arizonica* as an endangered species in the May 20, 1983, **Federal Register** (48 FR 22757).

Summary of Comments and Recommendations

In the May 20, 1983, proposed rule (48 FR 22757) and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice was published in the *Arizona Republic*, Phoenix, Arizona, on June 15, 1983, which invited general public comment. A total of 13 written comments received on the proposal, together with responses, are summarized and discussed below. No public hearing was requested or held.

Comments were received supporting the listing of the Arizona agave from the Arizona Game and Fish Department; Northern Arizona Council of Governments; Dr. H. S. Gentry, Arizona Desert Botanical Garden; Dr. C. T. Mason, Jr., Curator, University of Arizona Herbarium; Dr. T. R. Van Devender, Arizona Sonora Desert Museum; the Cactus and Succulent Society of America; and two private individuals. The International Union for the Conservation of Nature and Natural Resources (IUCN) commented that they have included *Agave arizonica* in "The IUCN Plant Red Data Book."

The Arizona Natural Heritage Program supported the listing of *Agave arizonica*; however, they noted ambiguity in the proposal concerning which historically known populations were still extant. This discrepancy has been clarified in this final rule.

The Arizona Commission of Agriculture and Horticulture assured the Service of the adequacy of the Arizona Native Plant Law (ARS 901.B) for protection of the Arizona agave; however, they indicated manpower problems associated with the enforcement of the law.

The Forest Service expressed doubt that *Agave arizonica* is a good species, indicating that it appears in some respects to be intermediate between two other species in the genus, apparently sets seed infrequently, and may be of recent hybrid origin. The Service agrees that the taxonomic status of *Agave arizonica* remains somewhat unclear. However, it is accepted as a species by

specialists in the group and appears to have maintained itself as a distinct entity since its discovery and description. It should be noted that many plant species are known or believed to be of hybrid origin. Such species are to be distinguished from the sporadic hybrid individuals or introgressive "hybrid swarms" that may occur in areas of overlap between the ranges of related species. *Agave arizonica* appears to occur as a series of very localized, isolated populations scattered over an area some 65 miles in its greatest extent. Although it may have originated through hybridization, it appears to now be a distinct and recognizable species. If further research indicates otherwise, the Service will consider removing the species from the list of endangered and threatened plants.

The Forest Service also commented that the populations with low numbers of individuals have never been adequately surveyed or counted. Dr. H. S. Gentry and associates at the Desert Botanical Garden have seen 13 of the 19 historical populations and they have found 1 to 7 plants per population. The type locality was among those reconfirmed and contained new individuals (6 subadult plants and 6 suckering or adjacent seedlings). The Desert Botanical Garden staff confirmed that 4 of the 19 populations have disappeared (Gentry, pers. comm., 1983), the two remaining historical populations have not been recently reconfirmed or proven extirpated.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Agave arizonica* should be classified as an endangered species. Procedures found at Section 4(a) of the Endangered Species Act (16 U.S.C. 1531 et seq.) and regulations promulgated to implement the listing provisions of the Act (codified at 50 CFR Part 424; under revision to accommodate 1982 Amendments—see August 8, 1983, **Federal Register**, 48 FR 36962) were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in Section 4(a)(1) of the Act. These factors and their application to *Agave arizonica* H. S. Gentry and J. H. Weber (Arizona agave) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Nineteen populations were historically known in

an area in the Tonto National Forest. Thirteen populations are now known to exist, with one to seven plants per population (Gentry, pers. comm., 1983). Fewer than 100 plants total are known to exist, and any loss of habitat would greatly endanger this species. Land use in this area consists of permitted cattle grazing. Grazing may have a negative impact upon the species' habitat as well as direct impacts upon the species. Proper protection and management plans for the plants are needed. Grazing and over-collection along with other factors may have contributed to the loss of populations and individuals.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Overutilization of this succulent (similar to cacti) species for the purpose of cultivation in private rock gardens and for commercial trade threatens this species. The botanist for the Forest Service Southwest Region identified the collecting threat to this species and has suggested that the Forest Service prohibit the taking of all agaves in the west central portion of the Tonto National Forest in the range of *Agave arizonica*. However, taking prohibitions on plants are difficult to enforce in the extremely rugged backcountry of the Tonto National Forest. Adequate personnel are not available to patrol the area and to stop all unauthorized taking. Thus, the populations like many other cacti and agaves remain threatened by desert succulent collectors. The road into the main habitat area has been closed to limit access, which has afforded it some protection; however, *Agave arizonica* is a slowly reproducing plant which could not readily repopulate an area from which individuals were removed (Fletcher, 1978; Phillips *et al.*, 1980). These threats make the species especially vulnerable since the total number of plants is so low (less than 100 plants total).

C. *Disease or predation.* Grazing occurs in the habitat of *Agave arizonica*. Cattle and deer browse this species and may play a role in its poor reproductive success by eating the flower stalks before the capsules ripen. Rabbits, squirrels, and insects also have damaged these plants. Studies should be undertaken to determine possible additional grazing impacts, appropriate stocking rates, and any necessary protective measures for *Agave arizonica* to ensure the species' continued survival (Fletcher, 1978; Phillips *et al.*, 1980).

D. *The inadequacy of existing regulatory mechanisms.* *Agave arizonica* is protected by the Arizona Native Plant Law, A.R.S., Chapter 7,

Section 3-901, which specifically prohibits collection of *Agave arizonica*, except for scientific or educational purposes under permit. This provision bars only collection, however, and not incidental destruction or habitat modification. It does not affect Federal actions directly. Violation constitutes only a class-three misdemeanor, the lowest grade of misdemeanor recognized under State law. This law is difficult to enforce, especially in the rugged mountainous habitat of this plant. There is some Federal protection from taking of *Agave arizonica* by Forest Service regulations (36 CFR 261.9(b)). The Endangered Species Act would complement the existing protection and offer additional protection for the species by restricting interstate and international commerce, by substantially increasing penalties for violations, and by providing the protection of Section 7 of the Act.

E. *Other natural or manmade factors affecting its continued existence.* Any human pressure on this species may increase the possibility of its small populations going extinct through natural fluctuations. Disturbances are likely to have a severe impact on this species as the distribution is restricted, the populations are very small, the reproductive potential is low, and few young plants have been observed in the wild. Less than 100 plants are known to exist, total.

The careful assessment of the best scientific information available, as well as the best assessment of the past, present, and future threats faced by this species were considered in preparing this rule. Based on this evaluation, the decision has been made to list *Agave arizonica* as endangered without critical habitat. Endangered status seems appropriate because of the past decline and the current threats to the species.

Because only 13 populations of the agave with 1 to 7 individual plants are currently known, and because of the threat of collecting, threatened status would not be adequate.

Critical Habitat

Section 4(a)(3) of the Endangered Species Act of 1973, as amended, requires that, to the maximum extent prudent and determinable the Secretary should designate critical habitat at the time a species is determined to be endangered or threatened. Critical habitat is not being designated for *Agave arizonica* at this time since it would not be prudent due to the potential for illegal taking. The Arizona agave is a highly desirable plant for desert rock gardens because of its attractive globular rosette (basally

attached leaves) and 2.7-3.5 meter tall inflorescence (flowering stalk). Publishing detailed location maps (i.e., critical habitat maps published in the **Federal Register**) of the *Agave arizonica* populations would make the species more vulnerable to taking by collectors. Although the removal and reduction to possession of listed plants from Federal lands is prohibited by the Act, this prohibition would be difficult to enforce, especially in backcountry areas, where *Agave arizonica* occurs, therefore, it would not be prudent to designate critical habitat for *Agave arizonica*.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practice. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for land acquisition and cooperation with the States and requires that recovery actions, which are initiated by the Service following listing, be carried out for all listed species. The protection required by Federal agencies, and the taking prohibitions, are discussed, in part, below.

Section 7(a) of the Act, as amended, required Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402 and are now under revision (see proposal at 48 FR 29989; June 29, 1983). Section 7(a)(4) requires Federal agencies to informally confer with the Service on any action that is likely to jeopardize the continued existence of a proposed species. When a species is finally listed, Section 7(a)(2) requires federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species. If a proposed action may affect a listed species, the Federal agency must enter into consultation with the Service.

All populations of *Agave arizonica* occur on Forest Service land. The Forest Service's present regulations prohibit removing, destroying, or damaging any plant that is classified as a threatened, endangered, rare, or unique species (36 CFR 261.9), and are consistent with the purposes of the Act.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62,

and 17.63 set forth a series of general trade prohibitions and exceptions which apply to all endangered plant species. With respect to *Agave arizonica*, all trade prohibitions of Section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, or sell or offer for sale this species in interstate or foreign commerce. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving listed species under certain circumstances. It is anticipated that few permits would ever be sought or issued since the species is not common in cultivation or in the wild.

Section 9(a)(2)(B) of the Act, as amended in 1982, states that it is unlawful to remove and reduce to possession endangered plant species from areas under Federal jurisdiction. The new prohibition now applies to *Agave arizonica*. Permits for exceptions to this prohibition are available through Section 10(a) of the Act, until revised regulations are promulgated to incorporate the 1982 amendments. Proposed regulations implementing this new prohibition were published on July 8, 1983 (48 FR 31417) and these will be finalized following public comment. *Agave arizonica* occurs only on Forest Service lands. It is anticipated that few taking permits for the species will ever be requested.

Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240, (703/235-1903).

On July 29, 1983, *Agave arizonica* was placed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Permits are required from both the importing and exporting countries before international shipment of such species may occur. Only scientific trade which will benefit the species' survival in the wild is allowed. International trade of this species is minimal. The Service will review this species to determine whether it should be placed upon the Annex of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, which is implemented through Section 8(A)(e) of the Act, and whether it should be considered for

other appropriate international agreements.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined by the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to Section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

References

- Fletcher, Reggie. 1978. Status report: *Agave arizonica* Gentry and J.H. Weber. U.S. Forest Service, Region 3, Albuquerque, NM. 3 pp.
Gentry, H.S. 1970. Two New Agaves in Arizona. *Cactus and Succulent Journal* 42(5):223-225.
Kearney, T.H. and R.H. Peebles. 1951. *Arizona Flora*. University of California Press, Berkeley, California.
Phillips, B.G., A.M. Phillips, J. Mazzoni, and E.M. Peterson. 1980. Status Report on *Agave arizonica*. U.S. Fish and Wildlife Service, Office of Endangered Species, Albuquerque, NM.

Authors

The authors of this final rule are Sandra Limerick and Margaret Olwell, Endangered Species Staff, U.S. Fish and Wildlife Service, Department of the Interior, P.O. Box 1306, Albuquerque, New Mexico 87103. The editor is E.

LaVerne Smith, Office of Endangered Species, Washington, D.C. 20240. Status information and a preliminary package were provided under contract to the Service by Dr. Barbara G. Phillips, Dr. Arthur M. Phillips III, Jill Mazzoni, and Elaine M. Peterson, Museum of Northern Arizona, Route 4, Box 720, Flagstaff, Arizona.

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Regulation Promulgation

PART 17—[AMENDED]

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the U.S. Code of Federal Regulations, is amended as set forth below:

1. The authority citation for Part 17 reads as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*).

2. Amend § 17.12(h) by adding the Arizona agave in alphabetical order under Agavaceae to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

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Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
AGAVACEAE—Agave family						
<i>Agave arizonica</i>	Arizona agave	U.S.A (AZ)	E		NA	NA

Dated: May 2, 1984.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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